REMARKS

Claims 1-10 are pending in this application.

I. Formal Matters

Applicants acknowledge the withdrawal of the previous drawing and §112 objection and rejection.

II. Pending Claims 1-10 Define Patentable Subject Matter

In the Office Action, claims 1-6 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,339,482 to Desimone. Additionally, claim 7 is rejected under 35 U.S.C. §103(a) over Desimone. These rejections are respectfully traversed.

As discussed during the June 19 personal interview, it is an essential feature of the present invention as defined by independent claims 1 and 8 that the first and second parts "are firmly connected to one another by a shrink fit caused by the injection-molding operation." Further, it is important that the first and second molded parts "do not form a chemical bond during the injection-molding operation." See Applicants' specification at, for example, page 2, lines 21-30. These are resultant structural features of Applicants' product-by-process claim 1 and must be given patentable weight.

Although the Patent Office typically determines patentability of product-by-process claims based on the product itself, the Patent Office must consider structure implied by the process when assessing patentability where the process steps impact distinctive structural characteristics to the final product. See In re Garnero, 412 F.2d 276, 162 USPQ 221 (CCPA 1979) and MPEP §2113. However, in construing the claims, the Examiner is either neglecting certain inherent structural features or misconstruing the applied reference teachings. The following structural distinctions are made possible by the claimed product by process.

It is evident that Desimone teaches to form the head 12 and the handle 16 in a first molding operation and to form the insert 22 in a second molding operation which is separate from the first molding operation. Please see the abstract, column 4, line 64 - column 5, line 2 and column 5, lines 35-38. The two parts (handle 16 with head 12 and insert 22) are assembled after the two separate molding operations are finished (column 5, lines 38-43). As admitted, the production process in Desimone is different than the disclosed process. There is no doubt that the insert 22 is secured within the handle 16 by means of a compression fit (see column 5, lines 9 - 23; and column 4, lines 8-45).

A compression fit is not the same structurally as a 'shrink fit'. Therefore, it is apparent from the resultant product itself whether the two parts are connected to one another by a compression fit or a shrink fit.

In claim 1, the first and second molded parts are firmly connected to one another by a shrink fit caused by the injection molding process that does not include a chemical bond, which might have otherwise occurred during the joint injection molding operation. Due to the shrink fit, one of the molded parts exerts pressure on the other part resulting from the different shrinking properties of the two plastic materials to fit the two parts together without bonding or fusing.

To the contrary, the handle and resilient insert 22 of Desimone are formed from two separate pieces of a predetermined size. Then, the insert 22, which is oversized relative to the opening of the handle, is compression fit into the opening and tends to expand in order to create the compression fit (see column 5, lines 16-21 and the Figures). As such, there is no shrink fit as claimed. This is one of many structural differences between the product formed by the Desimone process and the recited product-by-process of claim 1.

Regarding the Examiner's assertion that use of two hard plastic materials is not claimed and instead only referenced in the specification, Applicants remind the Examiner that

the claims are read in light of the specification. Referring to page 6 of the specification, there is an implied resultant structural difference attainable by the recited process that cannot be attained by the Desimone process. That is, in shown embodiments, two hard materials can be combined and fitted together without a chemical bond and without a resilient member by use of the disclosed process of molding materials with dissimilar shrinkage properties. This allows one of the molded parts to shrink relative to the other molded part so as to connect and fix the parts together.

Two hard materials cannot be properly fitted in Desimone when formed by its process. This is because the two separate pieces are combined after molding and without a discussion as to any shrinkage. There is nothing to teach or suggest that one part is shrunk as a result of the molding to achieve shrink fitting as claimed.

In the 1st paragraph on page 12 of the Office Action the Examiner interprets various technical terms incorrectly. Injection molding does not necessarily result in a shrink fit as alleged. If only one type of material is used, there is no shrink fit at all. This is also true if two materials are used having the same shrinking properties. In order to achieve a shrink fit in the sense of the present invention, the two (or more) materials used must have different shrinking properties and must not form a chemical bond to achieve the structural fit. Moreover, the shrinkage would have to occur after the assembly in order for the two hard parts to be fitted together in a partially encapsulated fashion as claimed without bonding.

The Examiner's attention is also drawn to the statement in column 2, lines 55-57 in combination with column 2, lines 6-34. The toothbrush of Desimone is not produced according to the Zahoransky process while calls for molding a toothbrush in a mold having two cavities and using two different plastic materials. In this known Zahoransky method, the two materials fuse with one another (column 2, lines 30-32). For the reasons outlined above, it is evident that Desimone does not at all teach to produce a toothbrush by means of the two-

material molding technique using a mold having two cavities since to do so would eliminate the need for the separate resilient insert with a compression fit.

Considering this fact, some of the statements under item 1 of the Office Action are obviously not correct and not based on the objective teaching of Desimone. For example, the Desimone product requires a resilient insert with a compression fit in order to obtain a desired fit. Desimone's method is incapable of teaching one of ordinary skill in the art how to achieve a fit without bonding using two hard materials. As discussed in Applicants' specification, the two parts can be made from polypropylene (claim 6) and SAN (claim 7) respectively. Both are resultant hard materials that can be used with the recited process. As such, when read in light of the specification, such properties are inherently covered structural aspects of the claimed product-by-process. To the contrary, Desimone requires a resilient material as the insert to achieve its taught compression fit.

In the second paragraph of this item 1, the Examiner states that "each molded part is consisting of a different material that do not bond during an injection-molding operation' (3rd and 4th lines). This statement would imply that Desimone makes use of a two-material joint partially encapsulated injection molding operation during which the two materials may fuse with one another during the molding process. As outlined above, Desimone does not make use of such a two-material molding operation. Rather, to the contrary, Desimone teaches away by specifically using separate molding processes in which the two parts are not fitted together during the molding, but only subsequently fitted after the molding and then held together by the taught resilient compression fit, rather than the claimed shrink fit.

Furthermore, to the extent that Desimone even proposes to use different materials, namely polypropylene and Santoprene rubber, if these two materials were used in a two-material molding process they would fuse or form a chemical bond (see column 4, line 66 and column 5, line 15).

Based on the above, it is believed that independent claim 1 defines over the applied art and would not have been obvious. As such, claim 1 and claims dependent therefrom are believed to be allowable.

Additionally, the statement in the second paragraph of item 1, lines 8-11 is not readily understood and finds no basis in the disclosure of Desimone. Nowhere can Applicants find an indication that one of the two molded parts of the Desimone toothbrush consists of two or more different plastic components, i.e. materials. Rather, it is taught that the handle and brush are formed from one material and the insert can be formed from a resilient material. As such, the rejection of claim 5 is improper.

Withdrawal of the rejections is respectfully requested.

In the Office Action, claim 8 is rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,761,759 to Leversby. Additionally, claim 10 is rejected under 35 U.S.C. §103(a) over Leversby. These rejections are respectfully traversed.

The assessment of U.S. 6,761,759 (Leversby) under item 2, on page 3 of the Office Action is not correct. The statement in lines 6 and 7 of the second paragraph of this item 2 ('the second plastic material does not form a chemical bond during the injection molding operation') does not find any basis in Leversby. This reference is silent regarding the exact type or nature of the first and second plastic materials used. Therefore, Leversby does not at all teach to use materials which do not form a chemical bond during the injection molding operation. The statement in lines 7-16, column 4 of Leversby is related to the fact that the portions consisting of the second material are physically separated and isolated from each other and does not refer to the properties of the first and second plastic materials in relation to one another. As such, there is no teaching that the second plastic does not form a chemical bond during the injection molding. Such a teaching can only be gleaned from the impermissible hindsight consideration of Applicants' specification. Moreover, as argued

previously, if the two materials used have similar shrinkage properties there is no inherent shrinkage that would result in a shrink fit connection as recited in claim 8. Moreover, in light of the complete silence as to this matter or to the benefit of such, it also would not have been obvious to one of ordinary skill in the art to modify the Leversby teachings to enable one to achieve the claimed result. To the contrary, in light of other teachings, it may be assumed by one of ordinary skill in the art that the fit can be achieved by chemical bonding of the two materials, as done in the Zahoransky process.

That is, in the claimed process the two different materials are injection molded together and kept from bonding to form a partially encapsulated product. This is entirely different and non-obvious from the Leversby process. Moreover, it differs from conventional 2-material molding that specifically teach chemical bonding for fixing of the two materials together. As such, the only motivation for such a construction of Leversby is impermissible hindsight consideration.

Therefore, Leversby cannot anticipate or render obvious independent method claim 8. Claim 10 dependent therefrom is allowable at least for its dependence on base claim 8.

Withdrawal of the rejections is respectfully requested.

In the Office Action, claims 8-9 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 6,076,223 to Dair. Additionally, claim 10 is rejected under 35 U.S.C. §103(a) over Dair. These rejections are respectfully traversed.

Dair discloses the possible use of various materials for the core piece of the toothbrush, namely the handle 12, the neck 14 and the head 16 (see column 3, line 66 - column 4, line 3) and also the possible use of various elastomeric materials for the non-slip surfaces 26, 28 (column 4, lines 11-15). Interestingly enough, Dair also considers the fabrication of the surfaces 26, 28 in a separate operation (column 4, lines 15-19). In connection with Figures 4-7, a two-step molding operation is described using a polypropylene

material 38 and Santoprene thermoplastic rubber 40 (see column 4, lines 52-54 and column 5, lines 13-16).

In other words, out of the various combinations of materials, Dair discloses only the combination polypropylene/Santoprene rubber for use in a two-step molding operation. However, as outlined earlier, these two materials do indeed fuse or form a chemical bond with one another when injection molded, which is contrary to the requirement in claim 8 that the fit be free of chemical bonding. Thus, in view of this clear teaching of Dair, it must be concluded that Dair does not even suggest that it is imperative to use two materials which do not form a chemical bond with each other during the injection molding operation. To the contrary, Dair, if anything, teaches against the claimed process.

For this matter, Dair cannot anticipate or render obvious independent method claim 8. Claim 10 is allowable at least for its dependence on base claim 8.

Withdrawal of the rejections is respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-10 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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